

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Noriyuki TAJIMA et al.

Serial No : Not Yet Assigned (National Stage of PCT/JP2004/017408)

I.A. Filed : November 24, 2004

For : HEATING APPARATUS

PRELIMINARY AMENDMENT

Commissioner of Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop _____
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

Prior to the examination of the above-identified patent application on the merits, the Examiner is respectfully requested to amend the claims as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A heating apparatus comprising:

an exciting coil made up of a plurality of windings of a conductor wire for generating a magnetic field;

a heating element that is heated by means of electromagnetic induction through an action of the magnetic field; and

an abnormally high temperature detection section that detects that said heating element reaches an abnormally high temperature, wherein :

said heating element is made up of a body of rotation which moves with respect to said exciting coil;

said exciting coil is wound along the axial direction of the body of rotation and disposed so as to face the outer surface of the body of rotation; and

said abnormally high temperature detection section is disposed on the same side as said exciting coil with respect to said heating element and between winding bundles of the conductor wire of said exciting coil.

2. (Original) The heating apparatus according to claim 1, further comprising at least one of a center core made of a ferromagnetic member disposed at a center position of the winding of the conductor wire of said exciting coil and a side core made of a ferromagnetic member disposed on the outer side of the winding bundle of the conductor wire of said exciting coil.

3. (Currently Amended) A heating apparatus comprising:

an exciting coil made up of a plurality of windings of a conductor wire for generating a magnetic field;

a heating element that is heated by means of electromagnetic induction through an action of the magnetic field;

an abnormally high temperature detection section that detects that said heating element reaches an abnormally high temperature; and

a center core made of a ferromagnetic member disposed at a center position of the winding of the conductor wire of said exciting coil,

wherein said abnormally high temperature detection section is disposed on the side of the winding bundle of the conductor wire of said exciting coil, in an area interposed between said exciting coil and said center core.

4. (Currently Amended) A heating apparatus comprising:

an exciting coil made up of a plurality of windings of a conductor wire for generating a magnetic field;

a heating element that is heated by means of electromagnetic induction through an action of the magnetic field;

an abnormally high temperature detection section that detects that said heating element reaches an abnormally high temperature; and

a side core made of a ferromagnetic member disposed on the outer side of the winding bundle of the conductor wire of said exciting coil,

wherein said abnormally high temperature detection section is disposed on the side of the winding bundle of the conductor wire of said exciting coil, in an area interposed between said exciting coil and said side core.

5. (Original) The heating apparatus according to claim 1, further comprising an opposed core disposed on the opposite side of said exciting coil with respect to said heating element for forming a magnetic path.

6. (Currently Amended) The heating apparatus according to claim 1 ~~one of claims 1, 3 and 4~~, wherein the conductor wire of said exciting coil in the area where said abnormally high temperature detection section is disposed are parallel to each other in a longitudinal direction of said heating element.

7. (Currently Amended) The heating apparatus according to claim 1 ~~one of claims 1, 3 and 4~~, wherein the winding bundle of the conductor wire of said exciting coil is symmetric with respect to the winding center of the conductor wire.

8. (Currently Amended) The heating apparatus according to claim 1 ~~one of claims 1, 3 and 4~~, wherein a flat-shaped thermal conductor is interposed between the conductor wires of said exciting coil in such a way that the plane of the thermal conductor is directed along the winding direction of the conductor wire and heat is transmitted to said abnormally high temperature detection section through thermal conduction of the thermal conductor.

9. (Original) The heating apparatus according to claim 8, wherein the thermal conductor is made of non-magnetic, highly thermal conductive metal.

10. (Currently Amended) The heating apparatus according to claim 1 ~~one of claims 1, 3, and 4~~, wherein said abnormally high temperature detection section is made up of at least one thermostat.

11. (Currently Amended) The heating apparatus according to claim 1 ~~any one of claims 1, 3 and 4~~, wherein said abnormally high temperature detection section is disposed in an area facing a minimum heated area of said heating element that heats a heated body in a minimum size that can be heated.

12. (Currently Amended) The heating apparatus according to claim 1 ~~any one of claims 1, 3 and 4~~, wherein said heating element is made up of a body of rotation that moves with respect to said exciting coil and said exciting coil is disposed at an opposed position along the outer surface of the body of rotation.

13. (Original) The heating apparatus according to claim 3, wherein said center core is disposed sideward apart from the winding center of the conductor wire of said exciting coil and said abnormally high temperature detection section is disposed adjacent to said center core between said exciting coil and said center core.

14. (Currently Amended) A fixing apparatus that uses the heating apparatus according to claim 1 ~~one of claims 1, 3 and 4~~ as a heating section of a heat-fixing section that heat-fixes an unfixed image formed on a recording medium.

15. (Original) An image forming apparatus that uses the fixing apparatus according to claim 14 as a heat-fixing section that heat-fixes an unfixed image formed on a recording medium.

REMARKS

By the above amendment, claims 1, 3, and 4 have been amended to correspond to the amendments made under PCT Article 34 in the International Application and claims 6, 7, 8, 10, 11, 12, and 14 have been amended to delete multiple claim dependency, and no estoppel should be deemed to be associated with this amendment.

If there should be any questions, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,
Noriyuki TAJIMA et al.



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